Montana Fish, Wildlife & Parks

ENVIRONMENTAL ASSESSMENT

Transfer of Westslope Cutthroat Trout from North Badger Creek to South Badger Creek (Two Medicine River Drainage)

I. Description of proposed action

A. Description of water body and action.

Receiving Waters:
Name: S. Badger Cr.
Location: T28N,R12W,sec13 and T28N,R11W,sec18,19,20,29,32
County: Pondera County

Donating Waters:
Name: N. Badger Cr.
Location: T28N,R12W,sec4,5,8 and T29N,R12W,sec27,34
County: Pondera County

Montana Fish, Wildlife & Parks (FWP) propose transferring live juvenile and adult westslope cutthroat trout (WCT: *Oncorhynchus clarkii lewisi)* from North Badger Creek to South Badger Creek in the Two Medicine River Drainage. Both N. Badger and S. Badger creeks are located on National Forest Lands (Lewis and Clark National Forest) (Figure 1). N. Badger Creek holds a robust (> 2,500 individuals) non-hybridized WCT population upstream of a significant waterfall barrier. Over 4 miles of S. Badger Creek is fishless upstream of a significant waterfall barrier (Crucifixion Falls). No more than 10% of the total population of fish >= 6 inches and no more than 20% of the total population of fish < 6 inches will be moved in any one year. A total of 150 to 300 WCT would be transferred over a one to three year period

B. Need for Action:

The westslope cutthroat trout is ranked as imperiled because of rarity and vulnerability to extinction throughout its range by the Natural Heritage Network and the State of Montana. Genetically pure WCT occupy about 8% of their historical range in the western United States (Shepard et al. 2003) and less than 2% of their historical range in northcentral Montana within the Missouri River Drainage (Moser et al. 2007). The Two Medicine Drainage currently supports 14 populations of non-hybridized WCT in approximately 46 miles of stream.

Major threats to WCT include: competition and hybridization with non-native rainbow trout (Leary et al. 1995; Hitt et al. 2003), competition with brook trout (Dunham et al. 2002; Peterson et al 2004), and isolation of remaining non-hybridized populations above barriers in short headwater sections of stream. These small isolated populations are at risk of extinction from catastrophic events (e.g. fire, drought, disease) and may eventually suffer negative consequences of inbreeding (Wang et al. 2002). Translocations and transfers have been commonly used to augment established populations, re-establish historic populations, and in this case create refuge populations (Stockwell and Leberg 2002).

Transfers of live fish have been successful in restoring or re-establishing WCT in numerous streams in Montana (e.g., N. Fk. Ford Creek and Cottonwood Creek in the Snowy Mountains) In the event of a catastrophic loss of the N. Badger Creek population or the new S. Badger Creek population, either WCT population could be used as a re-founding donor. Though populations will not be identical because of adaptations to the new environment in S. Badger Creek, replication should preserve some of the rare allelic diversity that is common in individual populations of WCT (Allendorf and Leary 1988).

S. Badger Creek has approximately 4 miles of fishless habitable stream above Crucifixion Falls. An additional 2 miles of habitat exists above an intermediate barrier in the headwaters of S. Badger Creek (Figure 1). The proposed action involves transferring wild WCT to the lower 4 miles of stream. The upper 2 miles of stream would remain fishless. S. Badger Creek was surveyed by the USFS for presence of fish and habitat fragmentation in 1996. No fish were found during these surveys. However, fish habitat was deemed acceptable, with adequate overwintering pools, good channel complexity, and a thriving aquatic invertebrate community. The average August temperature in 2006 and 2007 was 7.36 degrees C (collected every 2 hours with a thermograph). These low-intermediate summer water temperatures may impact fry growth/development and limit overwinter survival of WCT (Harig and Fausch 2002; Coleman and Fausch 2005). However, the amount of habitat, over 4 miles in total, should be adequate to overcome limitations in overwinter recruitment once a viable population is created. We predict that the 4 mile reach proposed for the transfer will not support more than the 2,500 minimum WCT population size recommended by Hilderbrand and Kershner (2000) for long term persistence (>100 years), primarily because of low water temperatures. Nevertheless, if the introduction is successful, the new population would have conservation value and would expand WCT distribution in the basin, thereby improving resilience to stochastic events (i.e. wildland fires). Furthermore, S. Badger Creek does drain more than the 5.6 square mile minimum watershed size recommended as a coarse filter for translocations by Harig and Fausch (2002).

II. Impacts of the proposed action

Please review the attached checklist on pages 8 to 13. The impacts of this action are included in the Environmental Assessment checklist. The following text addresses the impacts.

A. Impacts to the Physical Environment

Fish and Wildlife – *Section 5b and 5d of Checklist*

The proposed project would involve transfer of non-hybridized juvenile and adult WCT from N. Badger Creek to S. Badger Creek (both in Two Medicine Drainage).

Reproducing fish will likely colonize S. Badger Creek within 5 to 7 years of the initial transfers.

Disease testing: This EA and a Wild Fish Transfer request were submitted to the Fish Health Committee in the spring of 2009. The FWP wild fish transfer policy will be followed and WCT will not be transferred until disease testing requirements of the FWP Fish Health Committee have been met. Sixty WCT will be collected from the donor stream and tested for potential pathogens. S. Badger Creek above the barrier at Crucifixion Falls is less than 10 stream miles from the barrier on N. Badger Creek (Figure 1).

Genetic Analyses: Whole fish collected from N. Badger Creek for gel electrophoresis analysis in 1984 and 1985 (N=30) provided no evidence of hybridization. In 2006, fin clips were collected from N. Badger Creek for INDEL DNA analysis (N=27). Two alleles usually characteristic of rainbow trout (0.1%) and Yellowstone cutthroat trout (0.2%) were detected. The presence of these alleles could be westslope cutthroat trout genetic variation that is indistinguishable from that usually characteristic of rainbow and Yellowstone cutthroat trout (Leary; 21 February 2007). These variant alleles were at a low frequency, making interpretation difficult. The conservative approach is to conclude this population is non-hybridized and proceed with the transfer. WCT collected for this transfer will be collected from high in the headwaters to maximize the chance of collecting pure individuals should these variant alleles actually be evidence of hybridization.

Aquatic Invertebrates and Amphibians: S. Badger Creek currently supports a population of tailed frogs. Tailed frogs (*Ascaphus truei*) commonly live in sympatry with salmonid species throughout their range, and are known to coexist with westslope cutthroat trout in North Badger Creek, Green Gulch, Limestone Creek, Lost Shirt Creek, Moudess Creek and other Rocky Mountain Front streams (USFS surveys). Moreover, tailed frogs have developed non-visual cues to the presence of aquatic predators, including cutthroat trout and brook trout. These cues allow tadpoles to hide from predators in crevices during daytime and come out at night to feed (Feminella and Hawkins 1994). There is little risk that the S. Badger Creek tailed frog population is rare or genetically distinct from other populations in Montana. Inland populations of tailed frogs have been shown to exhibit minimal genetic variation likely because of expansion during post glacial retreat followed by contemporary isolation (Nielson et al. 2001). Aquatic invertebrates were collected from above and below the barrier during early summer of 2000. Analysis indicated no rare taxa were present and most species are commonly found in the presence of trout (Gustafson 2000).

B. Impacts to the Human Environment

Land Use – *Section 7a of Checklist*

The proposed project would have no impact on productivity or profitability of the area. Helicopter transfers would be timed so a as to minimize conflicts with outfitter operations in the area.

Aesthetics/Recreation – *Section 11c of Checklist*

S. Badger Creek above Crucifixion Falls is currently fishless. The establishment of a robust population of WCT in S. Badger Creek will provide an opportunity to fish for genetically pure WCT, Montana's State Fish, in a pristine and remote area of Lewis and Clark National Forest. Over two miles of the uppermost headwaters of S. Badger Creek will remain fishless. Helicopter transfers would be timed so as to minimize conflicts with recreationists (including archery hunters).

III. Discussion of Reasonable Alternatives

1) No Action

Do not transfer any fish into S. Badger Creek and maintain as a fishless aquatic system. Under this alternative there would be no transfer of N. Badger Creek fish. N. Badger Creek would likely not be replicated because of a lack of alternative sites for transfer.

2) Proposed Action:

Westslope cutthroat trout would be transferred from N. Badger Creek to S. Badger Creek. The total miles of stream inhabited by genetically unaltered WCT in the Two Medicine River Drainage would increase by 4 miles. Under this alternative, the unique genetic legacy of the donor WCT population would be substantially more secure than at the present time FWP has agreed to take actions to benefit WCT (Conservation Agreement: MFWP 2007) and this project would provide a substantial contribution to WCT conservation in Montana

IV. Environmental Assessment Conclusion Section

1) Is an EIS required? This environmental review demonstrates that the impacts of this proposed project are not significant. The proposed action would provide substantial benefits to WCT and reduce the potential loss of genetic material from N. Badger Creek with minimal impact on the physical, biological, or the human environment, and thus would not require the detailed environmental review of an Environmental Impact Statement.

References

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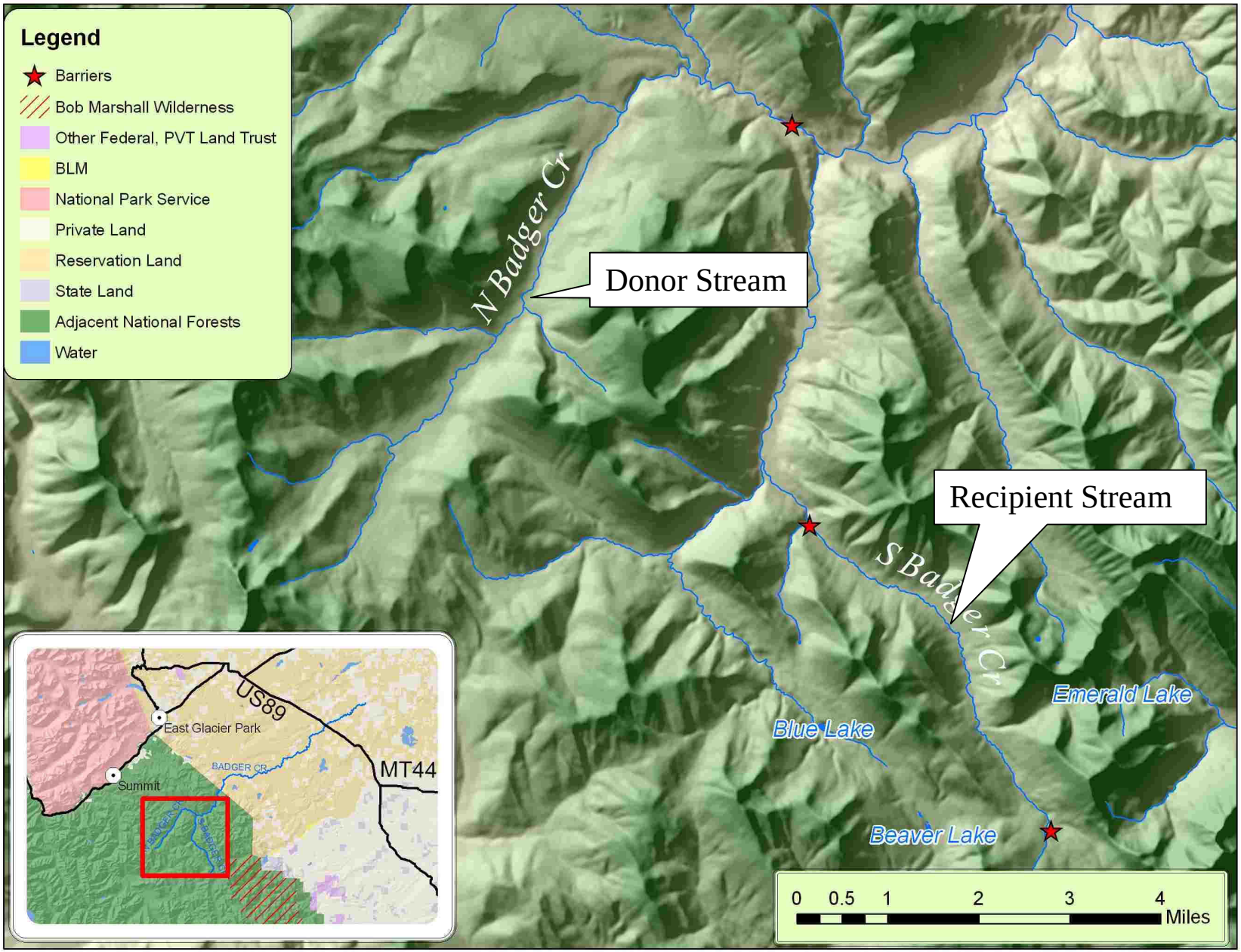

Figure 1. Area map showing N. Badger Cr., S. Badger Cr., and vicinity.

Montana Department of Fish, Wildlife and Parks
4600 Giant Springs Road, Great Falls, MT 59405

Environmental Assessment Checklist

Project: Transfer of wild fish from N. Badger Creek to S. Badger Creek (Two Medicine River Drainage) **Division:** Fisheries Division
Description of Project: Montana Fish, Wildlife & Parks propose transferring live juvenile and adult westslope cutthroat trout (WCT: *Oncorhynchus clarkii lewisi)* from N. Badger Creek to S. Badger Creek in the Two Medicine River Drainage. The proposed transfer will create a new non-hybridized WCT population in over 6 miles of S. Badger Creek.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
2. WATER **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				

h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)		X				
3. AIR **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge, which will conflict with federal or state air quality regulations?		X				
4. VEGETATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				
5. FISH/WILDLIFE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X			p. 2-4
c. Changes in the diversity or abundance of non-game species?		X				

d. Introduction of new species into an area?				X Beneficial		p. 1-4 Need for Action Section
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
7. LAND USE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?			X			p.3
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
8. RISK/HEALTH HAZARDS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				

b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. Will any chemical toxicants be used?		X				
9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
10. PUBLIC SERVICES/TAXES/UTILITIES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _____		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				
11. AESTHETICS/RECREATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				

c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X Beneficial			p. 4
d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
12. CULTURAL/HISTORICAL RESOURCES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Will the project affect historic or cultural resources?		X				
13. SUMMARY EVALUATION OF SIGNIFICANCE **Will the proposed action, considered as a whole:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources, which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				
g. List any federal or state permits required.						

Other groups or agencies contacted or which may have overlapping jurisdiction: None

List of Individuals or groups contributing to this EA: Ken Staigmiller, Fish Health Coordinator, FWP, Great Falls, MT; Dave Yerk, Fish Biologist, FWP, Choteau, MT; Mike Enk, Fish Biologist, USFS, Great Falls.

List of all agencies and individuals who have been notified of this proposed transfer: Public notification via the FWP Web Site (http://fwp.mt.gov/publicnotices/).

Recommendation concerning preparation of EIS: No EIS Required. Impacts of action expected to be minor. Benefits to westslope cutthroat trout are expected to be significant.

EA prepared by: David Moser, Fisheries Biologist, FWP, Great Falls, MT. **Date:** Jan 21, 2009.

Comments will be accepted until: March 9, 2009

Comments should be sent to: David Moser, FWP, c/o USFS, P.O. Box 869, Great Falls, MT 59403; dmoser@mt.gov